

**Grade 5**

**Unit 5**

**2-Dimensional Geometry**

**Student Workbook**

**Name:**



Name \_\_\_\_\_

Date \_\_\_\_\_

1. Draw a pair of parallel lines in each box. Then use the parallel lines to draw a trapezoid with the following:

No right angles.	Only 1 obtuse angle.
2 obtuse angles.	At least 1 right angle.

2. Use the trapezoids you drew to complete the tasks below.
- Measure the angles of the trapezoid with your protractor, and record the measurements on the figures.
  - Use a marker or crayon to circle pairs of angles inside each trapezoid with a sum equal to  $180^\circ$ . Use a different color for each pair.

3. List the properties that are shared by all the trapezoids that you worked with today.
4. When can a quadrilateral also be called a trapezoid?
5. Follow the directions to draw one last trapezoid.
- Draw a segment  $\overline{AB}$  parallel to the bottom of this page that is 5 cm long.
  - Draw two  $55^\circ$  angles with vertices at  $A$  and  $B$  so that an isosceles triangle is formed with  $\overline{AB}$  as the base of the triangle.
  - Label the top vertex of your triangle as  $C$ .
  - Use your set square to draw a line parallel to  $\overline{AB}$  that intersects both  $\overline{AC}$  and  $\overline{BC}$ .
  - Shade the trapezoid that you drew.

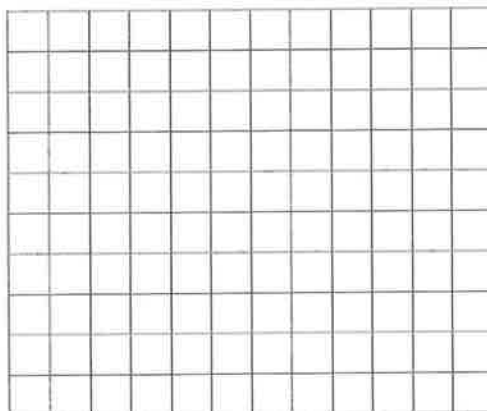
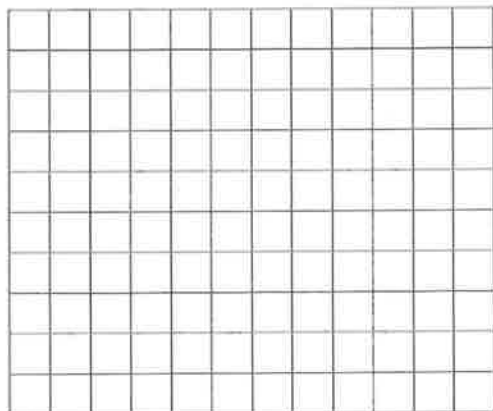
Name \_\_\_\_\_

Date \_\_\_\_\_

1. Use a straightedge and the grid paper to draw:

a. A trapezoid with exactly 2 right angles.

b. A trapezoid with no right angles.



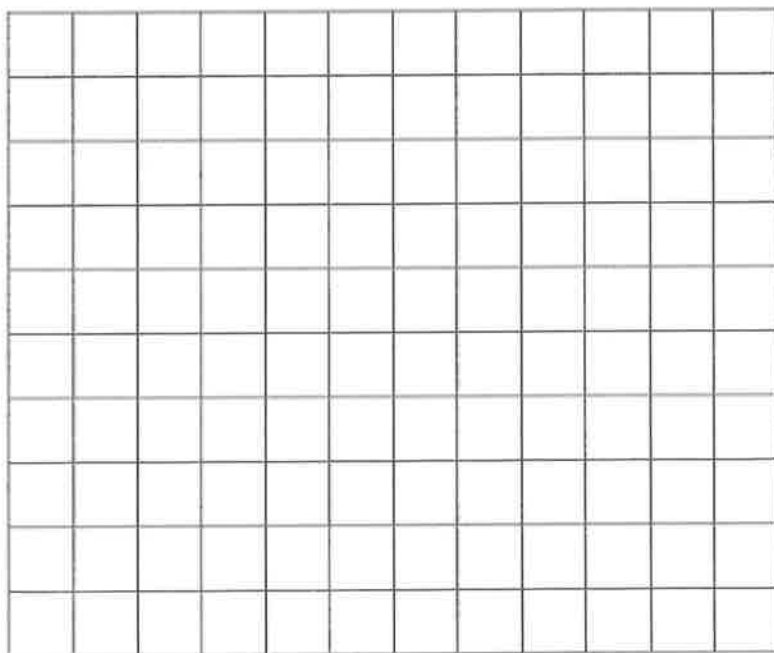
2. Kaplan incorrectly sorted some quadrilaterals into trapezoids and non-trapezoids as pictured below.

a. Circle the shapes that are in the wrong group and tell why they are missorted.

Trapezoids	Non-Trapezoids

b. Explain what tools would be necessary to use to verify the placement of all the trapezoids.

3. Use a straightedge to draw an isosceles trapezoid on the grid paper.



- a. Why is this shape called an isosceles trapezoid?

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Draw a parallelogram in each box with the attributes listed.

No right angles.	At least 2 right angles.
Equal sides with no right angles.	All sides equal with at least 2 right angles.

2. Use the parallelograms you drew to complete the tasks below.
  - a. Measure the angles of the parallelogram with your protractor, and record the measurements on the figures.
  - b. Use a marker or crayon to circle pairs of angles inside each parallelogram with a sum equal to  $180^\circ$ . Use a different color for each pair.
3. Draw another parallelogram below.
  - a. Draw the diagonals and measure their length. Record the measurements to the side of your figure.
  - b. Measure the length of each of four segments of the diagonals from the vertices to the point of intersection of the diagonals. Color segments that have the same length the same color. What do you notice?
4. List the properties that are shared by all of the parallelograms that you worked with today.
  - a. When can a quadrilateral also be called a parallelogram?
  - b. When can a trapezoid also be called a parallelogram?

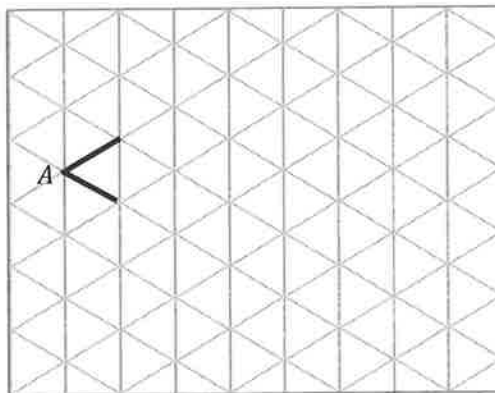


Name \_\_\_\_\_

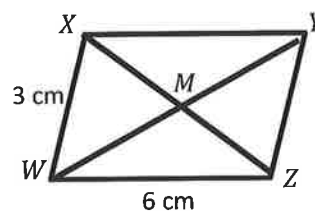
Date \_\_\_\_\_

1.  $\angle A$  measures  $60^\circ$ . Extend the rays of  $\angle A$  and draw parallelogram  $ABCD$  on the grid paper.

- a. What are the measures of  $\angle B$ ,  $\angle C$ , and  $\angle D$ ?



2.  $WXYZ$  is a parallelogram not drawn to scale.
- a. Using what you know about parallelograms, give the measure of sides  $XY$  and  $YZ$ .



- b.  $\angle WXY = 113^\circ$ . Use what you know about angles in a parallelogram to find the measure of the other angles.

$\angle XYZ = \underline{\hspace{2cm}}^\circ$

$\angle YZW = \underline{\hspace{2cm}}^\circ$

$\angle ZWX = \underline{\hspace{2cm}}^\circ$

3. Jack measured some segments in Problem 2. He found that  $WY = 4$  cm and  $MZ = 3$  cm. Give the lengths of the following segments:

$WM = \underline{\hspace{2cm}}$  cm

$MY = \underline{\hspace{2cm}}$  cm

$XM = \underline{\hspace{2cm}}$  cm

$XZ = \underline{\hspace{2cm}}$  cm

4. Using the properties of the shapes, explain why all parallelograms are trapezoids.
5. Teresa says that because the diagonals of a parallelogram bisect each other, if one diagonal is 4.2 cm, the other diagonal must be half that length. Use words and pictures to explain Teresa's error.

**A**

# Correct \_\_\_\_\_

Divide:					
1	$\frac{1}{2} \div 2 =$		23	$4 \div \frac{1}{4} =$	
2	$\frac{1}{2} \div 3 =$		24	$\frac{1}{3} \div 3 =$	
3	$\frac{1}{2} \div 4 =$		25	$\frac{2}{3} \div 3 =$	
4	$\frac{1}{2} \div 7 =$		26	$\frac{1}{4} \div 2 =$	
5	$7 \div \frac{1}{2} =$		27	$\frac{3}{4} \div 2 =$	
6	$6 \div \frac{1}{2} =$		28	$\frac{1}{5} \div 2 =$	
7	$5 \div \frac{1}{2} =$		29	$\frac{3}{5} \div 2 =$	
8	$3 \div \frac{1}{2} =$		30	$\frac{1}{6} \div 2 =$	
9	$2 \div \frac{1}{5} =$		31	$\frac{5}{6} \div 2 =$	
10	$3 \div \frac{1}{5} =$		32	$\frac{5}{6} \div 3 =$	
11	$4 \div \frac{1}{5} =$		33	$\frac{1}{6} \div 3 =$	
12	$7 \div \frac{1}{5} =$		34	$3 \div \frac{1}{6} =$	
13	$\frac{1}{5} \div 7 =$		35	$6 \div \frac{1}{6} =$	
14	$\frac{1}{3} \div 2 =$		36	$7 \div \frac{1}{7} =$	
15	$2 \div \frac{1}{3} =$		37	$8 \div \frac{1}{8} =$	
16	$\frac{1}{4} \div 2 =$		38	$9 \div \frac{1}{9} =$	
17	$2 \div \frac{1}{4} =$		39	$\frac{1}{8} \div 7 =$	
18	$\frac{1}{5} \div 2 =$		40	$9 \div \frac{1}{8} =$	
19	$2 \div \frac{1}{5} =$		41	$\frac{1}{8} \div 7 =$	
20	$3 \div \frac{1}{4} =$		42	$7 \div \frac{1}{6} =$	
21	$\frac{1}{4} \div 3 =$		43	$9 \div \frac{1}{7} =$	
22	$\frac{1}{4} \div 4 =$		44	$\frac{1}{8} \div 9 =$	

**B**

Improvement \_\_\_\_\_ # Correct \_\_\_\_\_

Divide:

1	$\frac{1}{2} \div 2 =$		23	$3 \div \frac{1}{3} =$	
2	$\frac{1}{5} \div 3 =$		24	$\frac{1}{4} \div 4 =$	
3	$\frac{1}{5} \div 4 =$		25	$\frac{3}{4} \div 4 =$	
4	$\frac{1}{5} \div 7 =$		26	$\frac{1}{3} \div 3 =$	
5	$7 \div \frac{1}{5} =$		27	$\frac{2}{3} \div 3 =$	
6	$6 \div \frac{1}{5} =$		28	$\frac{1}{6} \div 2 =$	
7	$5 \div \frac{1}{5} =$		29	$\frac{5}{6} \div 2 =$	
8	$3 \div \frac{1}{5} =$		30	$\frac{1}{5} \div 5 =$	
9	$2 \div \frac{1}{2} =$		31	$\frac{3}{5} \div 5 =$	
10	$3 \div \frac{1}{2} =$		32	$\frac{3}{5} \div 4 =$	
11	$4 \div \frac{1}{2} =$		33	$\frac{1}{5} \div 6 =$	
12	$7 \div \frac{1}{2} =$		34	$6 \div \frac{1}{5} =$	
13	$\frac{1}{2} \div 7 =$		35	$6 \div \frac{1}{4} =$	
14	$\frac{1}{4} \div 2 =$		36	$7 \div \frac{1}{6} =$	
15	$2 \div \frac{1}{4} =$		37	$8 \div \frac{1}{7} =$	
16	$\frac{1}{3} \div 2 =$		38	$9 \div \frac{1}{8} =$	
17	$2 \div \frac{1}{3} =$		39	$\frac{1}{8} \div 8 =$	
18	$\frac{1}{2} \div 2 =$		40	$9 \div \frac{1}{9} =$	
19	$2 \div \frac{1}{2} =$		41	$\frac{1}{9} \div 8 =$	
20	$4 \div \frac{1}{3} =$		42	$7 \div \frac{1}{7} =$	
21	$\frac{1}{3} \div 4 =$		43	$9 \div \frac{1}{6} =$	
22	$\frac{1}{3} \div 3 =$		44	$\frac{1}{8} \div 6 =$	

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Draw the figures in each box with the attributes listed.

Rhombus with no right angles.	Rectangle with not all sides equal.
Rhombus with 1 right angle.	Rectangle with all sides equal.

2. Use the figures you drew to complete the tasks below.
- Measure the angles of the figures with your protractor and record the measurements on the figures.
  - Use a marker or crayon to circle pairs of angles inside each figure with a sum equal to  $180^\circ$ . Use a different color for each pair.

3. Draw a rhombus and a rectangle below.

- a. Draw the diagonals and measure their length. Record the measurements on the figure.
- b. Measure the length of each segment of the diagonals from the vertex to the intersection point of the diagonals. Using a marker or crayon, color segments that have the same length. Use a different color for each different length.

4.

- a. List the properties that are shared by all of the rhombuses that you worked with today.

- b. List the properties that are shared by all of the rectangles that you worked with today.

- c. When can a trapezoid also be called a rhombus?

- d. When can a parallelogram also be called a rectangle?

- e. When can a quadrilateral also be called a rhombus?

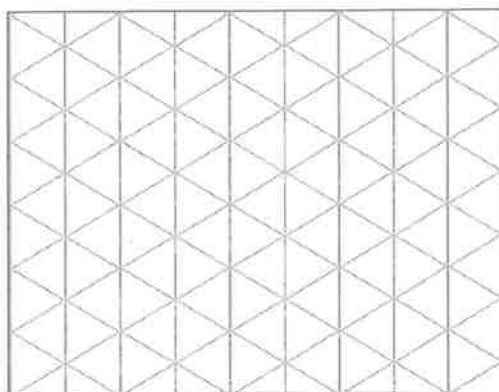
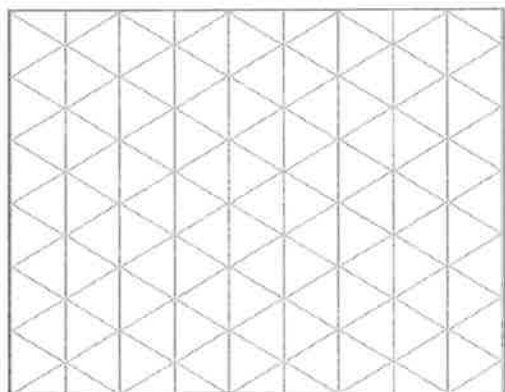
Name \_\_\_\_\_

Date \_\_\_\_\_

1. Use the grid paper to draw.

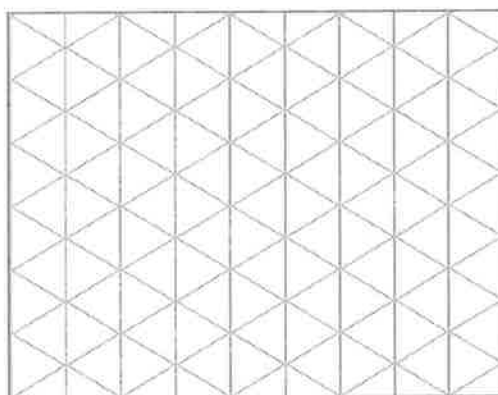
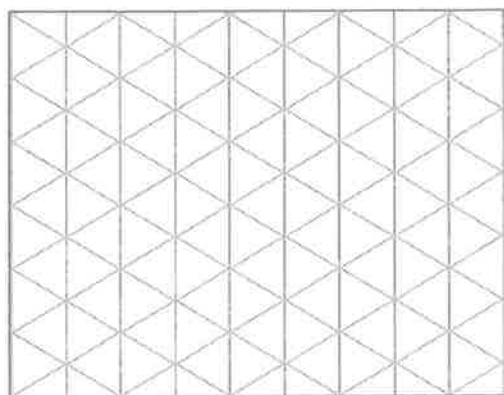
a. A rhombus with no right angles.

b. A rhombus with 4 right angles.



c. A rectangle with not all sides equal.

d. A rectangle with all sides equal.



2. A rhombus has a perimeter of 217 cm. What is the length of each side of the rhombus?

3. List the properties that all rhombuses share.

4. List the properties that all rectangles share.



**A**

# Correct \_\_\_\_\_

Multiply.

1	$2 \times 10 =$		23	$33 \times 20 =$	
2	$12 \times 10 =$		24	$33 \times 200 =$	
3	$12 \times 100 =$		25	$24 \times 10 =$	
4	$4 \times 10 =$		26	$24 \times 20 =$	
5	$34 \times 10 =$		27	$24 \times 100 =$	
6	$34 \times 100 =$		28	$24 \times 200 =$	
7	$7 \times 10 =$		29	$23 \times 30 =$	
8	$27 \times 10 =$		30	$23 \times 300 =$	
9	$27 \times 100 =$		31	$71 \times 2 =$	
10	$3 \times 10 =$		32	$71 \times 20 =$	
11	$3 \times 2 =$		33	$14 \times 2 =$	
12	$3 \times 20 =$		34	$14 \times 3 =$	
13	$13 \times 10 =$		35	$14 \times 30 =$	
14	$13 \times 2 =$		36	$14 \times 300 =$	
15	$13 \times 20 =$		37	$82 \times 20 =$	
16	$13 \times 100 =$		38	$15 \times 300 =$	
17	$13 \times 200 =$		39	$71 \times 600 =$	
18	$2 \times 4 =$		40	$18 \times 40 =$	
19	$22 \times 4 =$		41	$75 \times 30 =$	
20	$22 \times 40 =$		42	$84 \times 300 =$	
21	$22 \times 400 =$		43	$87 \times 60 =$	
22	$33 \times 2 =$		44	$79 \times 800 =$	

**B**

Improvement \_\_\_\_\_ # Correct \_\_\_\_\_

Multiply.

1	$3 \times 10 =$		23	$44 \times 20 =$	
2	$13 \times 10 =$		24	$44 \times 200 =$	
3	$13 \times 100 =$		25	$42 \times 10 =$	
4	$5 \times 10 =$		26	$42 \times 20 =$	
5	$35 \times 10 =$		27	$42 \times 100 =$	
6	$35 \times 100 =$		28	$42 \times 200 =$	
7	$8 \times 10 =$		29	$32 \times 30 =$	
8	$28 \times 10 =$		30	$32 \times 300 =$	
9	$28 \times 100 =$		31	$81 \times 2 =$	
10	$4 \times 10 =$		32	$81 \times 20 =$	
11	$4 \times 2 =$		33	$13 \times 3 =$	
12	$4 \times 20 =$		34	$13 \times 4 =$	
13	$14 \times 10 =$		35	$13 \times 40 =$	
14	$14 \times 2 =$		36	$13 \times 400 =$	
15	$14 \times 20 =$		37	$72 \times 30 =$	
16	$14 \times 100 =$		38	$15 \times 300 =$	
17	$14 \times 200 =$		39	$81 \times 600 =$	
18	$2 \times 3 =$		40	$16 \times 40 =$	
19	$22 \times 3 =$		41	$65 \times 30 =$	
20	$22 \times 30 =$		42	$48 \times 300 =$	
21	$22 \times 300 =$		43	$89 \times 60 =$	
22	$44 \times 2 =$		44	$76 \times 800 =$	

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Draw the figures in each box with the attributes listed. If your figure has more than one name, write it in the box.

Rhombus with 2 right angles.	Kite with all sides equal.
Kite with 4 right angles.	Kite with 2 pairs of adjacent sides equal. (The pairs are not equal to each other.)

2. Use the figures you drew to complete the tasks below.
- Measure the angles of the figures with your protractor, and record the measurements on the figures.
  - Use a marker or crayon to circle pairs of angles inside each figure with a sum equal to  $180^\circ$ . Use a different color for each pair.

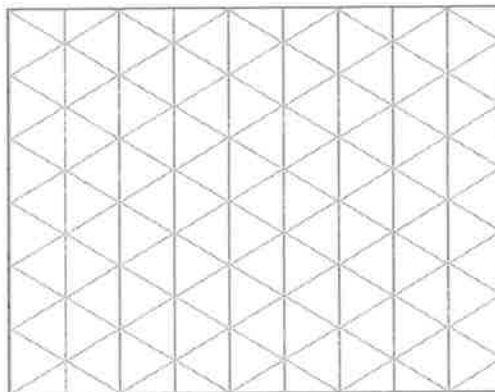
- 3.
- a. List the properties shared by all of the squares that you worked with today.
  
  
  
  
  
  
  
  
  
  
  - b. List the properties shared by all of the kites that you worked with today.
  
  
  
  
  
  
  
  
  
  
  - c. When can a rhombus also be called a square?
  
  
  
  
  
  
  
  
  
  
  - d. When can a kite also be called a square?
  
  
  
  
  
  
  
  
  
  
  - e. When can a trapezoid also be called a kite?

Name \_\_\_\_\_

Date \_\_\_\_\_

1.

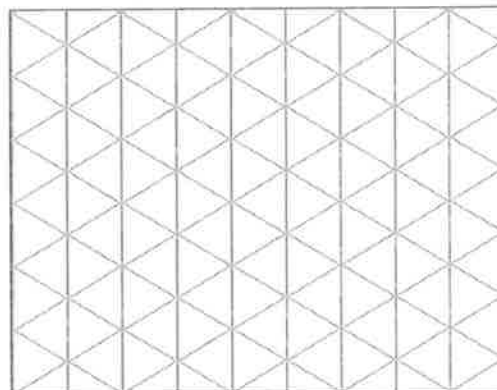
- Draw a kite that is not a parallelogram on the grid paper.
- List all the properties of a kite.



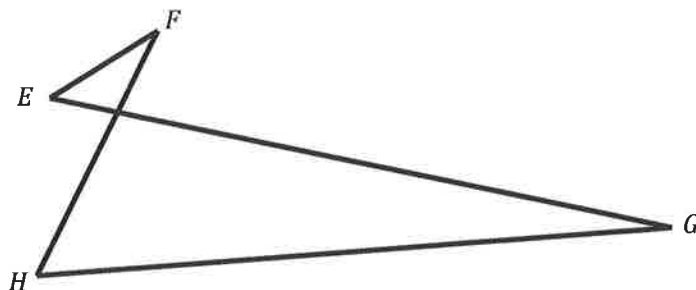
- When can a parallelogram also be a kite?

- If rectangles must have right angles, explain how a rhombus could also be called a rectangle.

- Draw a rhombus that is also a rectangle on the grid paper.



4. Kirkland says that figure  $EFGH$  below is a quadrilateral because it has four points in the same plane and four segments with no three endpoints collinear. Explain his error.



Name \_\_\_\_\_

Date \_\_\_\_\_

1. True or false. If the statement is false, rewrite it to make it true.

	T	F
a. All trapezoids are quadrilaterals.		
b. All parallelograms are rhombuses.		
c. All squares are trapezoids.		
d. All rectangles are squares.		
e. Rectangles are always parallelograms.		
f. All parallelograms are trapezoids.		
g. All rhombuses are rectangles.		
h. Kites are never rhombuses.		
i. All squares are kites.		
j. All kites are squares.		
k. All rhombuses are squares.		

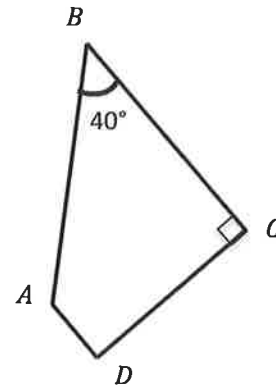
2. Fill in the blanks.

- a.  $ABCD$  is a trapezoid. Find the measurements listed below.

$\angle A = \underline{\hspace{2cm}}^\circ$

$\angle D = \underline{\hspace{2cm}}^\circ$

What other names does this figure have?



- b.  $RECT$  is a rectangle. Find the measurements listed below.

$TE = \underline{\hspace{2cm}}$

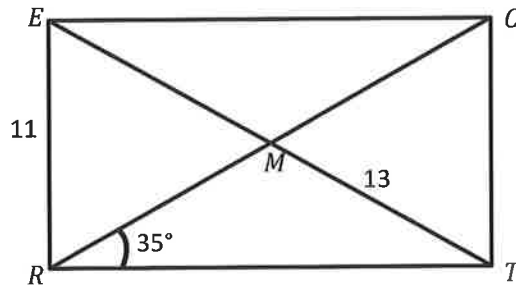
$RC = \underline{\hspace{2cm}}$

$CT = \underline{\hspace{2cm}}$

$\angle ERM = \underline{\hspace{2cm}}^\circ$

$\angle CTR = \underline{\hspace{2cm}}^\circ$

What other names does this figure have?



- c.  $PARL$  is a parallelogram. Find the measurements listed below.

$AL = \underline{\hspace{2cm}}$

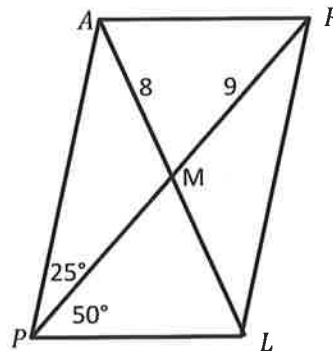
$PR = \underline{\hspace{2cm}}$

$\angle ARL = \underline{\hspace{2cm}}^\circ$

$\angle PAR = \underline{\hspace{2cm}}^\circ$

$\angle RLP = \underline{\hspace{2cm}}^\circ$

What other names does this figure have?

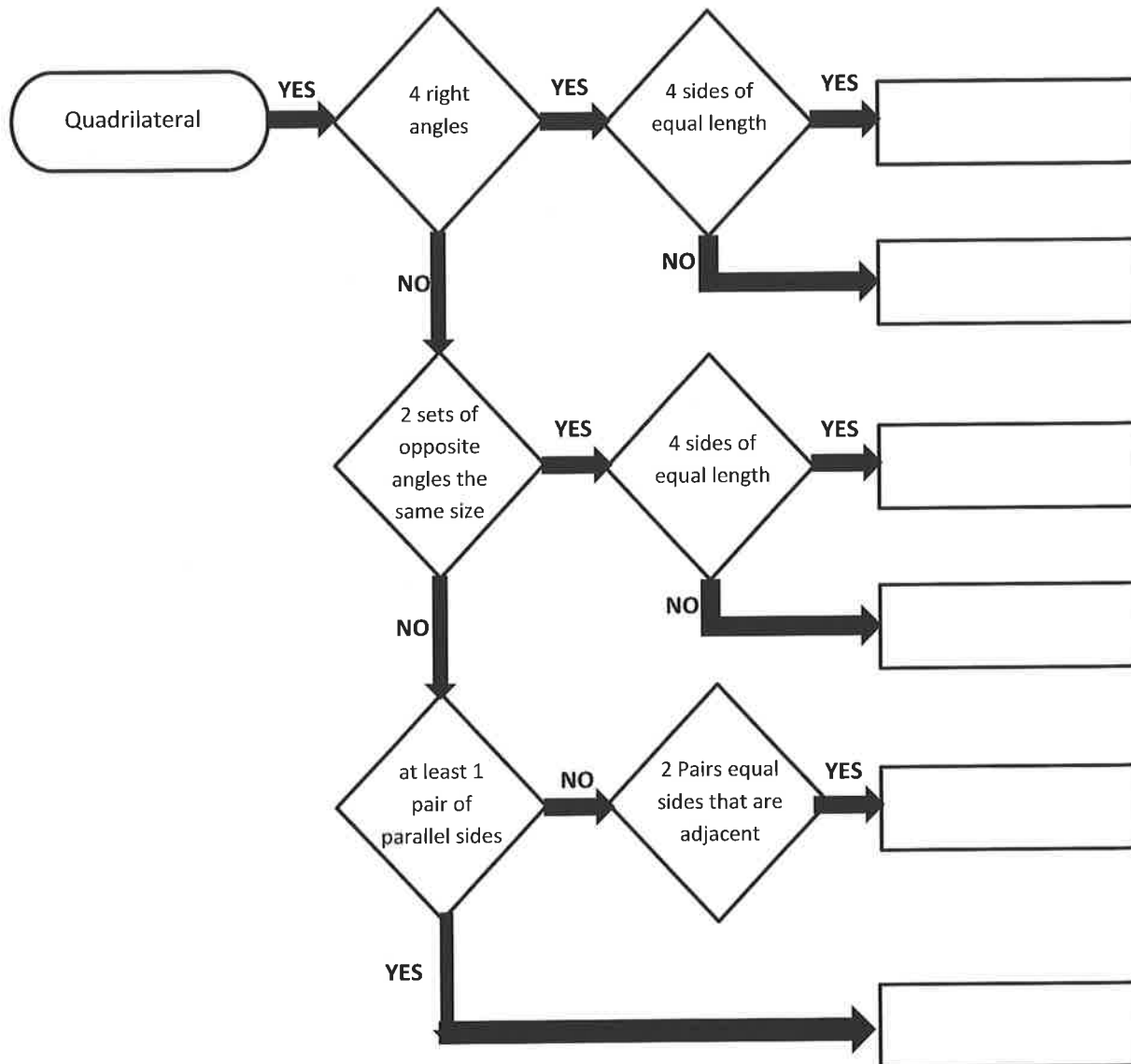




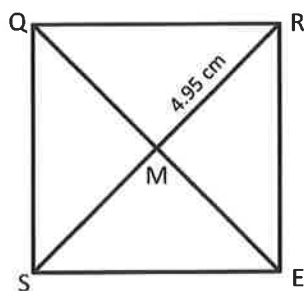
Name \_\_\_\_\_

Date \_\_\_\_\_

1. Follow the flow chart and put the name of the figure in the boxes.



2.  $SQRE$  is a square with area  $49 \text{ cm}^2$  and  $RM = 4.95 \text{ cm}$ . Find the measurements using what you know about the properties of squares.



- a.  $RS =$  \_\_\_\_\_ cm
- b.  $QE =$  \_\_\_\_\_ cm
- c. Perimeter = \_\_\_\_\_ cm
- d.  $m\angle QRE =$  \_\_\_\_\_  $^\circ$
- e.  $m\angle RMQ =$  \_\_\_\_\_  $^\circ$

**A**

# Correct \_\_\_\_\_

Divide.

1	$30 \div 10 =$	23	$480 \div 4 =$
2	$430 \div 10 =$	24	$480 \div 40 =$
3	$4,300 \div 10 =$	25	$6,300 \div 3 =$
4	$4,300 \div 100 =$	26	$6,300 \div 30 =$
5	$43,000 \div 100 =$	27	$6,300 \div 300 =$
6	$50 \div 10 =$	28	$8,400 \div 2 =$
7	$850 \div 10 =$	29	$8,400 \div 20 =$
8	$8,500 \div 10 =$	30	$8,400 \div 200 =$
9	$8,500 \div 100 =$	31	$96,000 \div 3 =$
10	$85,000 \div 100 =$	32	$96,000 \div 300 =$
11	$600 \div 10 =$	33	$96,000 \div 30 =$
12	$60 \div 3 =$	34	$900 \div 30 =$
13	$600 \div 30 =$	35	$1,200 \div 30 =$
14	$4,000 \div 100 =$	36	$1,290 \div 30 =$
15	$40 \div 2 =$	37	$1,800 \div 300 =$
16	$4,000 \div 200 =$	38	$8,000 \div 200 =$
17	$240 \div 10 =$	39	$12,000 \div 200 =$
18	$24 \div 2 =$	40	$12,800 \div 200 =$
19	$240 \div 20 =$	41	$2,240 \div 70 =$
20	$3,600 \div 100 =$	42	$18,400 \div 800 =$
21	$36 \div 3 =$	43	$21,600 \div 90 =$
22	$3,600 \div 300 =$	44	$25,200 \div 600 =$

**B** Improvement \_\_\_\_\_ # Correct \_\_\_\_\_

Divide.			
1	$20 \div 10 =$	23	$840 \div 4 =$
2	$420 \div 10 =$	24	$840 \div 40 =$
3	$4,200 \div 10 =$	25	$3,600 \div 3 =$
4	$4,200 \div 100 =$	26	$3,600 \div 30 =$
5	$42,000 \div 100 =$	27	$3,600 \div 300 =$
6	$40 \div 10 =$	28	$4,800 \div 2 =$
7	$840 \div 10 =$	29	$4,800 \div 20 =$
8	$8,400 \div 10 =$	30	$4,800 \div 200 =$
9	$8,400 \div 100 =$	31	$69,000 \div 3 =$
10	$84,000 \div 100 =$	32	$69,000 \div 300 =$
11	$900 \div 10 =$	33	$69,000 \div 30 =$
12	$90 \div 3 =$	34	$800 \div 40 =$
13	$900 \div 30 =$	35	$1,200 \div 40 =$
14	$6,000 \div 100 =$	36	$1,280 \div 40 =$
15	$60 \div 2 =$	37	$1,600 \div 400 =$
16	$6,000 \div 200 =$	38	$8,000 \div 200 =$
17	$240 \div 10 =$	39	$14,000 \div 200 =$
18	$24 \div 2 =$	40	$14,600 \div 200 =$
19	$240 \div 20 =$	41	$2,560 \div 80 =$
20	$6,300 \div 100 =$	42	$16,100 \div 700 =$
21	$63 \div 3 =$	43	$14,400 \div 60 =$
22	$6,300 \div 300 =$	44	$37,800 \div 900 =$

Date \_\_\_\_\_

- |                  |                  |
|------------------|------------------|
| Task #__ : _____ | Task #__ : _____ |
| Task #__ : _____ | Task #__ : _____ |
| Task #__ : _____ | Task #__ : _____ |



2. John says that because rhombuses do not have perpendicular sides, they cannot be rectangles. Explain his error in thinking.
3. Jack says that because kites don't have parallel sides, a square is not a kite. Explain his error in thinking.

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Answer the questions by checking the box.

a. Is a square a rectangle?

b. Is a rectangle a kite?

c. Is a rectangle a parallelogram?

d. Is a square a trapezoid?

e. Is a parallelogram a trapezoid?

f. Is a trapezoid a parallelogram?

g. Is a kite a parallelogram?

h. For each statement that you answered with “sometimes,” draw and label an example that justifies your answer.

Sometimes

Always


2. Use what you know about quadrilaterals to answer each question below

a. Explain when a trapezoid is not a parallelogram. Sketch an example.

b. Explain when a kite is not a parallelogram. Sketch an example.





# Exit Slips



Name \_\_\_\_\_

Date \_\_\_\_\_

1. Use a ruler and a set square to draw a trapezoid.

2. What attribute must be present for a quadrilateral to also be a trapezoid?



Name \_\_\_\_\_

Date \_\_\_\_\_

1. Draw a parallelogram.

2. When is a trapezoid also called a parallelogram?



Lesson 17:

Date:

Draw parallelograms to clarify their attributes, and define parallelograms based on those attributes.  
1/10/14

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Name \_\_\_\_\_

Date \_\_\_\_\_

1. Draw a rhombus.

2. Draw a rectangle.





Name \_\_\_\_\_

Date \_\_\_\_\_

1. List the property that must be present to call a rectangle a square.

2. Excluding rhombuses and squares, explain the difference between parallelograms and kites.



Name \_\_\_\_\_

Date \_\_\_\_\_

Use your tools to draw a square in the space below. Then fill in the blanks with an attribute. There is more than one answer to some of these.

- a. Because a square is a kite, it must have \_\_\_\_\_.
- b. Because a square is a rhombus, it must have \_\_\_\_\_.
- c. Because a square is a rectangle, it must have \_\_\_\_\_.
- d. Because a square is a parallelogram, it must have \_\_\_\_\_.
- e. Because a square is a trapezoid, it must have \_\_\_\_\_.
- f. Because a square is a quadrilateral, it must have \_\_\_\_\_.



Name \_\_\_\_\_

Date \_\_\_\_\_

1. Use the word bank to fill in the blanks.

**trapezoids   parallelograms**

All \_\_\_\_\_ are \_\_\_\_\_, but not all \_\_\_\_\_ are \_\_\_\_\_.

2. Use the word bank to fill in the blanks.

**kites   rhombuses**

All \_\_\_\_\_ are \_\_\_\_\_, but not all \_\_\_\_\_ are \_\_\_\_\_.